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Marketing Information Series



Recent Changes in the Florida Citrus Industry

A Graphic Review of Certain Economic Factors
Bearing on the Production and Marketing
of Florida Oranges and Grapefruit



UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL ADJUSTMENT ADMINISTRATION

Recent Changes in the Florida Citrus Industry

The Citrus Industry in the United States

The rapid growth of the citrus industry in the United States over a relatively short period of time has placed this country in a position of world leadership in the production of oranges and grapefruit. Domestically, the production of grapefruit and oranges constitutes one of the most important tree-fruit industries, being exceeded only by the apple industry in total farm value.

Numerous problems in production and marketing have accompanied this rapid development. Many of these problems have become intensified as plantings have increased and bigger crops have resulted. Out of necessity, growers in various producing areas united their efforts in working out needed solutions. These efforts are being supplemented in various ways through the aid of State and Federal governmental agencies.

Scope of the Industry

More than 65,000 growers are engaged in the production of oranges and grapefruit. Because of the peculiar climatic conditions under which these fruits must grow, the main producing areas are confined to the southern regions of the United States. Practically all of the commercial citrus fruits are grown in Florida, California, Arizona, and Texas, with much smaller amounts grown in Alabama, Louisiana, and Mississippi. Florida and California together produce about 97 percent of the oranges, while Florida and Texas together grow about 85 percent of the grapefruit.

Recent surveys indicate that in the four leading States, nearly 700,000 acres of land are devoted to oranges and grapefruit. Of this total, over 452,000 acres are in oranges, 187,100 acres are in grapefruit, and 26,700 acres are in tangerines.

The rapid growth of the citrus industry in the past two decades brought sharp increases in the production of oranges and grapefruit. In the period from 1919-20 through 1924-25, production of oranges for all States averaged 30,200,000 boxes a season, rose to an average of 41,700,000 boxes in the period from 1925-26 through 1930-31, and went on to 53,400,000 boxes in the period from 1931-32 through 1936-37. Production of oranges in the 1937-38 season was 68,600,000 boxes, an all-time record. The rate of increase followed by grapefruit has been almost twice that of oranges. Production rose from an average of 7,900,000 boxes in the period from 1919-20 through 1924-25, to 11,900,000 boxes in the period from 1925-26 through 1930-31, and then jumped to an average of 19,200,000 boxes from 1931-32 through 1936-37. The highest production was 30,700,000 boxes in the 1936-37 season. 1937-38 production is around 28,000,000 boxes.

Recent increases in the total volume of oranges and grapefruit available for markets, competition from other fruits, and a reduced level in the money income of consumers have combined to force the citrus industry to work harder in improving marketing conditions and expanding outlets. An outstanding development in this direction has been the increased use of citrus fruits, particularly grapefruit, for canning purposes. Also, as a result of bigger production, the citrus industry as a whole has become more impressed with the need for marketing oranges and grapefruit in an orderly manner.

Farm Value of Citrus Crops

The citrus industry makes a substantial annual contribution to national farm income. The farm value of citrus production on the basis of fruit at the packing house, dropped sharply during the 1932 depression, but turned upward with the improvement in general economic conditions which followed. Farm value of orange and grapefruit crops from 1925-26 through 1929-30 averaged \$135,400,000 a season. In the next 5 years, farm value

averaged \$92,200,000. The low point was reached in the 1932-33 season, when the orange and grapefruit crops had a farm value of \$68,937,000. Since the 1934-35 season, the farm value of the two crops has averaged \$113,900,000.

Oranges alone had a farm value averaging \$112,100,000 from 1925-26 through 1929-30. In the following 5 years, farm value dropped to an average of \$75,100,000, and in the 1932-33 depression year reached a low of \$56,200,000. Farm value of oranges since the 1934-35 season has averaged \$92,300,000.

Farm value of grapefruit production averaged \$23,200,000 from 1925-26 through 1929-30, and dropped to an average of \$17,009,000 in the following 5 years. Its low point was \$12,700,000 in the 1932-33 depression year. Since the 1934-35 season, farm value of grapefruit has averaged \$21,600,000 a year.

The gains in farm value of both oranges and grapefruit during recent years have been due largely to increases in the income of consumers which permitted the sale of larger supplies at the relatively lower prices.

Prospects for Oranges and Grapefruit

The number of trees now in production and the relatively high proportion of young trees yet to come into full bearing, point to continued increases in production of oranges and grapefruit over the next few years.

The greatest rise may be expected to take place in grapefruit supplies, particularly in the late or seedless varieties. Characteristic of the grapefruit industry is the large proportion of new plantings and young producing trees. With the age of grapefruit trees low, recent crops have increased sharply as young trees came into production and bearing surface increased. Indications are that this rapid rise will continue. It seems quite certain that grapefruit production over the next few years may average in excess of 30,000,000 boxes, compared with an average of 16,869,000 boxes from 1931-32 through 1935-36. The biggest share of the increase is likely to take place in Texas, where young trees predominate and the total number of trees is nearly as great as the number in Florida.

Production of oranges is expected to increase moderately over the next few years, largely because about 25 percent of the trees

are less than 11 years old and not in full bearing. Production of oranges may be expected to average from 60,000,000 to 65,000,000 boxes, as compared with an average production from 1931-32 through 1935-36 of around 53,000,000 boxes. Most of the gain can be expected to take place in Valencias and other late varieties. Production of navels and other early varieties may not increase greatly.

These prospective increases in production make even more difficult the marketing problems which growers have been trying to solve. Without a substantial increase in consumer buying power, surplus production seems unavoidable. How to meet this difficulty and prevent demoralization of markets and consequent losses to growers is a matter engaging the attention not only of those in the citrus industry but State and Federal agencies as well.

Trends Relating to Florida Grapefruit

The citrus industry of Florida outranks any other type of agricultural activity in the State. The annual value of Florida grapefruit, oranges, and tangerines accounts for nearly 50 percent of the total income from all crops grown in the State.

For a long time Florida has ranked first as the main center of grapefruit production. In the 5 years ending with the 1923-24 season, Florida produced 94 percent of the total United States supply. In the next five seasons, that State produced 88 percent of the total. The proportion of Florida grapefruit fell to 77 percent of the total supply in the 5 years ending with the 1933-34 season.

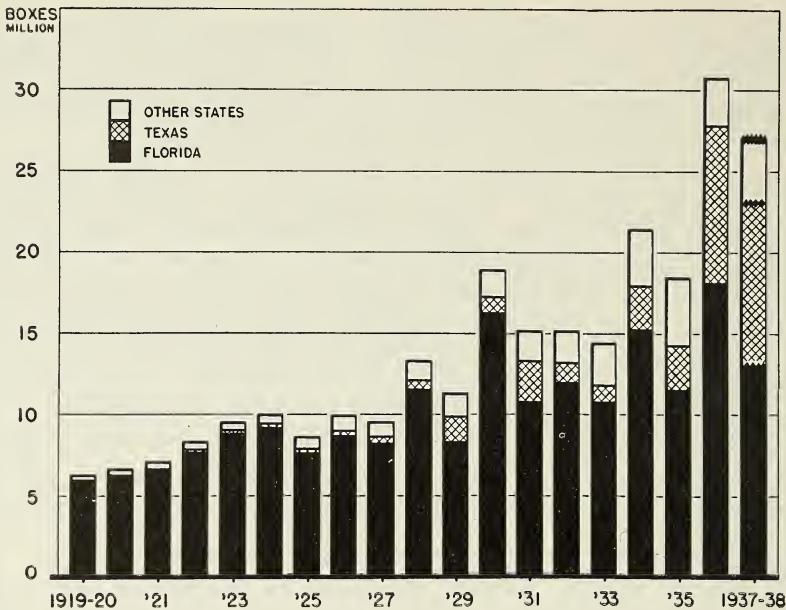
In more recent years, very sharp increases in grapefruit production have taken place in Texas. Gains have also been made in the California-Arizona area. The rapid rise in Texas has placed that State in a position of strong rivalry for the title which Florida has held so long as the leading grapefruit-producing area. In the 1936-37 season, Florida produced 59 percent of the total United States grapefruit supply, and in the 1937-38 season the Florida crop is estimated to be less than 50 percent of the total.

Of the 30,000 growers producing citrus fruit in Florida, grapefruit is grown by about 15,000, or 50 percent. Grapefruit production in Florida has been increasing steadily, and continued moderate gains are expected. In the decade since 1920, grapefruit crops in that State averaged 8,300,000 boxes a year. Since then production has climbed to an average of 13,450,000 boxes. Florida's biggest grapefruit crop came in the 1936-37 season when 18,100,000 boxes were produced.

The bulk of the Florida grapefruit is sold in eastern markets. The annual on-tree value of the crop in the past six seasons has represented about 28 percent of the total value of all citrus fruit grown in Florida. In the period from 1925-26 through 1930-31, the Florida on-tree value of grapefruit averaged \$12,150,000. The value of the crop reached a low point in the 1932-33 season, dropping to approximately \$4,700,000. Since the 1934-35 season, the on-tree value of Florida grapefruit has averaged about \$9,000,000.

Some of the economic trends and forces which have affected the grapefruit industry in Florida are indicated in the following pages.

Grapefruit Production Has Increased Rapidly



For about a decade beginning with the 1919-20 season, grapefruit production in the United States followed a gradual upward trend. Since then the increase has been more pronounced, being sharpest in the most recent years. The trend which grapefruit production has followed in the various areas of the United States is indicated in the graph above.

United States production of grapefruit during most of the period from the 1919-20 season to the 1927-28 season was fairly stable, averaging around 8,400,000 boxes. Practically all of the fruit was grown in Florida and production in Texas and other areas was of minor importance.

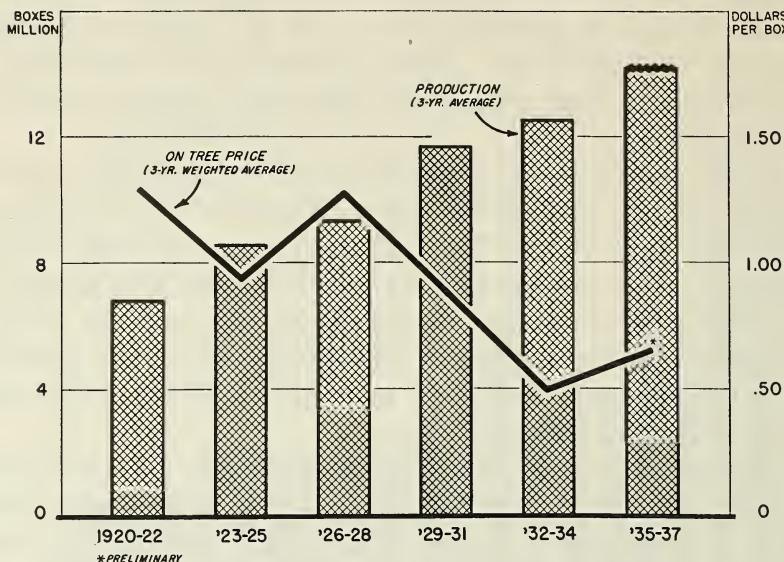
The first big crop after that period came in the 1928-29 season when 13,250,000 boxes were produced, of which Florida had 11,314,000 boxes. Texas had around 750,000 boxes of grapefruit. The crop in the 1929-30 season fell to 11,169,000 boxes, but in the 1930-31 season jumped to 18,934,000 boxes. Of this amount Florida had 16,109,000 boxes, a crop 72 percent greater than the average produced in the previous decade. During the next three seasons, United States production of grapefruit averaged almost 15,000,000 boxes.

In the 1934-35 season a crop of 21,367,000 boxes broke all previous records. Of this production, Florida had 15,200,000 boxes, Texas had 2,760,000 boxes, and the California-Arizona area had 3,407,000 boxes. Florida production fell somewhat in the next season, while crops in the other areas showed a tendency to increase.

All previous records of production were broken in the 1936-37 season, with a United States crop of 30,680,000 boxes of grapefruit. During this season Texas had its first big crop which totaled 9,630,000 boxes, compared with a production of 1,457,000 boxes, the average production in Texas during the 1928-32 period. Florida had its biggest crop of 18,100,000 boxes in the 1936-37 season. Grapefruit production in Florida averaged 11,657,000 boxes in the 1928-32 period.

United States production of grapefruit in the 1937-38 season is estimated to exceed 28,500,000 boxes, of which 13,000,000 boxes are accredited to Florida. The Texas grapefruit crop for the 1937-38 season is around 11,000,000 boxes, breaking all previous records for that State.

Florida Grapefruit Production-Price Trends



Production of grapefruit in Florida has climbed steadily since the early twenties. The rise became sharper in recent years as the productive capacity of trees increased and young plantings came into bearing.

The steady increase in production is accompanied by a downward trend in grower prices. The graph above shows how the on-tree price trend for Florida grapefruit dropped to lower levels with bigger crops. Production and on-tree prices shown in the graph are on the basis of 3-year averages, beginning with the period 1920-21 through 1922-23 and ending with the three seasons 1935-36 through 1937-38.

In the three seasons beginning with the 1920-21 crop, Florida grapefruit production averaged 6,851,000 boxes and the on-tree price averaged \$1.29 per box.

In the next 3-year period average production rose to 8,591,000 boxes and the on-tree price fell to an average of 94 cents per box. During this period the grapefruit industry felt the effects of the 1924 depression, and in all probability returns to growers fell lower than they would have fallen if more normal conditions had prevailed.

Florida grapefruit production increased to an average of 9,388,000 boxes in the 3-year period beginning with the 1926-27 season.

In this 3-year period, no appreciable increase in the average production took place, whereas a significant increase in consumer purchasing power occurred. The on-tree price averaged \$1.28 for the period, although the on-tree price for the 1928-29 crop of 11,314,000 boxes averaged only 84 cents.

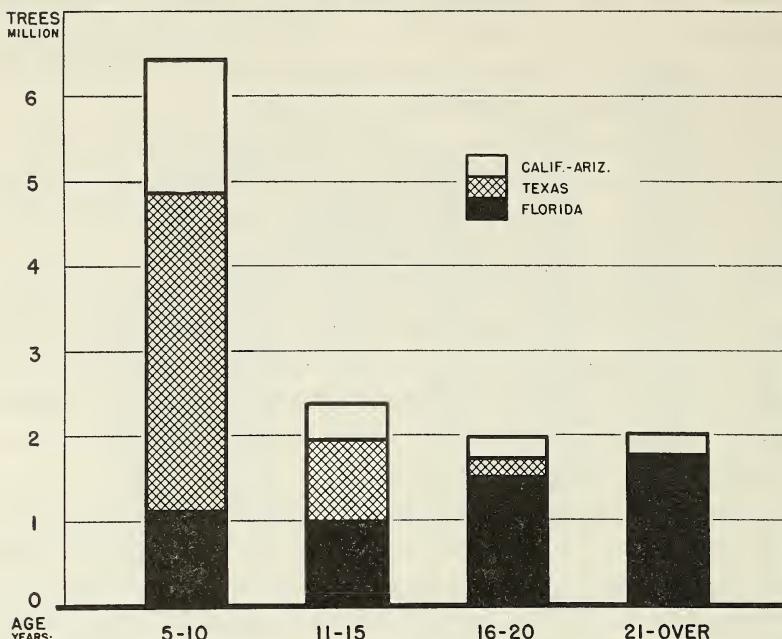
Production for the 3-year period beginning with the 1929-30 crop climbed to 11,723,000 boxes and the average on-tree price fell to 89 cents. The industry's first big crop, 16,109,000 boxes, came in the 1930-31 season of that period.

The crop averaged 12,567,000 boxes in the 3-year period beginning with the 1932-33 crop and the price average dropped to 50 cents. The average on-tree price for this period fell below the general downward trend of Florida grapefruit prices, principally because of the 1932 depression and the 15,200,000 boxes produced in the 1934-35 season.

Average production of Florida grapefruit for the 3-year period beginning with the 1935-36 season exceeds 14,000,000 boxes, with an average on-tree price slightly over 65 cents per box. Previous records of Florida production were broken in the 1936-37 season, when 18,100,000 boxes were produced. The on-tree price for this season averaged 58 cents. The industry was assisted in moving this big crop through Government purchases of fruit for relief use. These purchases supplemented a marketing agreement program under which growers and shippers tried to adjust shipments more in line with what markets could absorb and maintain a reasonable return to growers. During that same season Texas had its first big grapefruit crop, 9,630,000 boxes, three times the size of any previous crop in that State. The 1937-38 Texas crop is around 11,000,000 boxes, and the Florida crop is slightly over 13,000,000 boxes.

Further increases in grapefruit production, expected in all producing areas, are likely to add to the price problems experienced by the industry. The average on-tree price of Florida grapefruit for the last 3-year period indicates some improvement over that which prevailed in the depression years. However, examination of the graph above shows that this price is back in line with the downward trend which has accompanied increases in Florida grapefruit production since the early twenties.

Young Trees Dominate Grapefruit Situation



Continued sharp increases in grapefruit production in the United States are indicated by the number of bearing trees not yet in full production.

In the four grapefruit-producing States of Florida, Texas, California, and Arizona estimates indicate a total of 12,777,000 trees. Of this number, 69 percent are not in full production, ranging in age from 5 to 15 years. Only 31 percent of the trees are 16 years old and over, and in full production. Of the total number of grapefruit trees in the four producing States, over 50 percent are from 5 to 10 years old. It is from these trees that most of the future increase in production is expected to come. The graph above shows the number of bearing grapefruit trees by age groups in the four producing States as of July 1937.

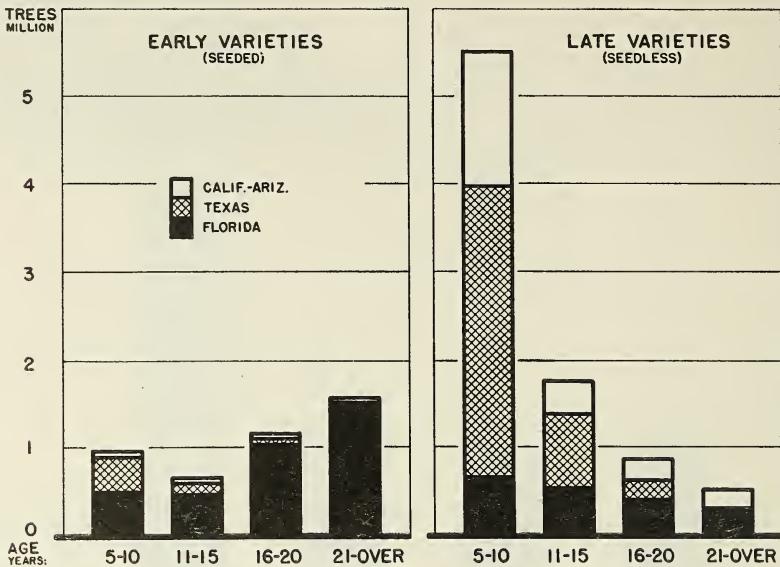
Most of the young trees from 5 to 10 years old are in Texas. For every tree which Florida has in this age group, Texas has about three and one-half trees. The California-Arizona area has more trees in this age group than Florida.

The number of trees falling in the 11- to 15-year-old age group is about the same in Florida as in Texas. California has about a third as many of its trees in this group as either Florida or Texas.

Of the total number of grapefruit trees in the four producing States, only 19 percent are in the 11- to 15-year-old age group.

The number of trees from 16 to 20 years old is greatest in Florida and only of minor importance in the other producing areas. Practically all trees exceeding 21 years in age are located in Florida. There are none in Texas and very few in the California-Arizona area.

Seedless Grapefruit Has Most Young Trees



The number of grapefruit trees planted in late or seedless varieties is over twice as great as the number planted in early or seeded varieties. The number of grapefruit trees of each variety by age groups in the various producing areas, as of July 1937, is shown in the graph above.

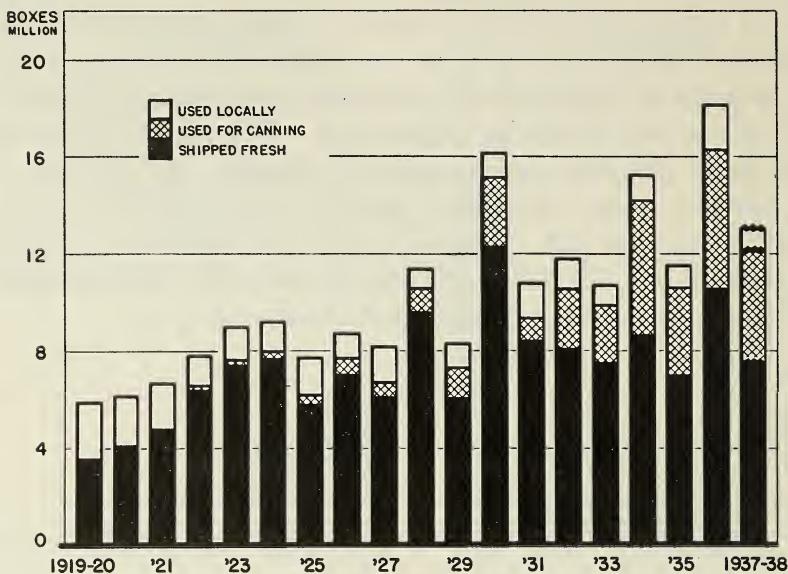
In the Florida, Texas, and California-Arizona producing areas, there are 8,598,000 trees of late or seedless varieties. Approximately half of these trees are in Texas. Of the total number of late varieties of grapefruit trees, about 64 percent, or 5,499,000, are from 5 to 10 years old. Of this number, Texas has 3,339,000, over five times as many as Florida and over twice as many as the California-Arizona area.

Only 21 percent, or 1,754,000, of the late varieties of grapefruit trees are 11 to 15 years old, with Texas having 824,000, approximately half of the total, and Florida 537,000. Only 10 percent, or 857,000 trees, are 16 to 20 years old, a little less than half of these being in Florida. Of the total late varieties, 5 percent, or 488,000, are 21 years old and over, 288,000 of them being in Florida and none in Texas.

Early or seeded varieties of grapefruit trees in the producing areas total 4,179,000, of which 3,489,000 are in Florida and a little over half a million in Texas.

In all producing States about 23 percent, or 923,000, of the total early or seeded grapefruit varieties are from 5 to 10 years old. Of these, 489,000 are in Florida, while Texas has 392,000. There are 622,000 trees from 11 to 15 years old. Over two-thirds of these are in Florida, nearly one-third are in Texas, and only a few are in the California-Arizona area. The 16- to 20-year-old age group includes approximately 27 percent, or 1,112,000, of the early or seeded varieties of grapefruit trees. Of this number Florida has 1,047,000. Trees 21 years old and over represent 36 percent, or 1,522,000, of the total in early and seeded varieties. Of these, Florida has 1,500,000 and Texas none.

Total Disposition of Florida Grapefruit



The increase in the total amount of Florida grapefruit absorbed in consuming channels has been more marked since 1930 than in previous years. This is indicated by the graph above which shows the total disposition of Florida grapefruit.

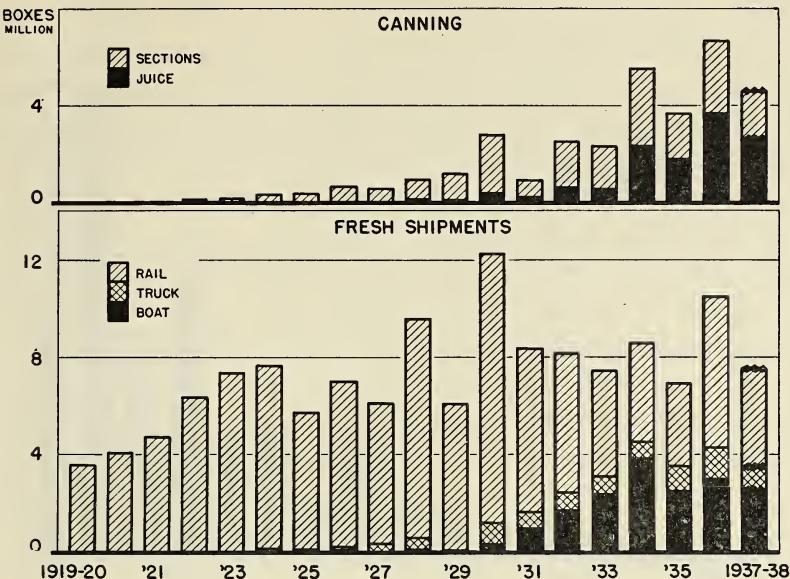
The amount of grapefruit used locally within the State of Florida is small in comparison with the supply available. In recent years approximately a million boxes of fresh fruit have been utilized locally.

The fresh fruit markets are still the most important outlets for Florida grapefruit, even though in recent years the volume from Florida going into these markets has undergone very little expansion.

Marked increases in the amounts of grapefruit used for canning purposes have occurred as the volume of production in the State increased.

During the 1936-37 season the Florida crop of 18,100,000 boxes was so large that all of it could not be absorbed in regular commercial fresh fruit and cannery outlets without seriously depressing prices to growers. During that season the Government assisted the grapefruit industry through purchases of large quantities for relief distribution.

Increased Volume Florida Grapefruit Canned



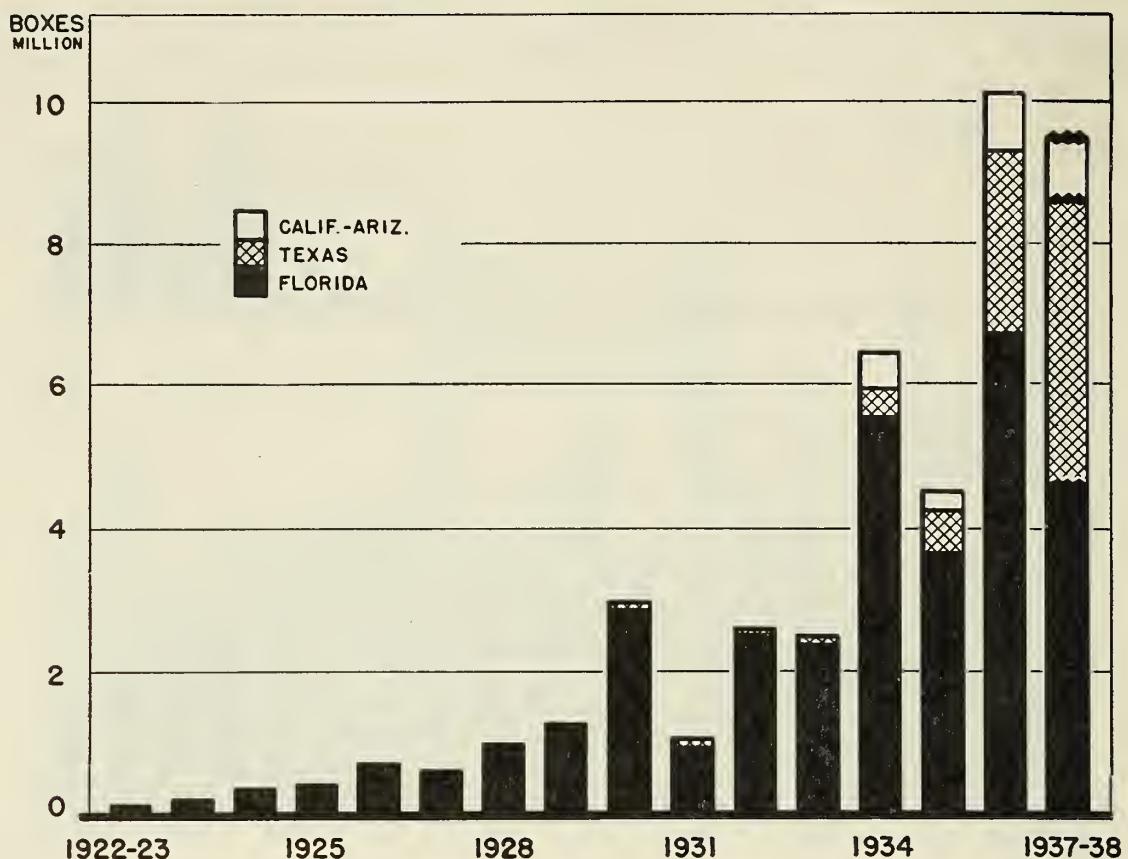
The fact that grapefruit has two types of outlets has grown in importance to the industry as production has increased.

The graph above shows the disposition of Florida grapefruit and the amount of fruit used for fresh shipment and canning purposes. As indicated by the graph, the amount of Florida grapefruit used for canning has increased very sharply in recent years, while the volume of fruit used for fresh shipment has been maintained at a relatively even level.

During recent years approximately one-half of the grapefruit used by canneries has been for the manufacture of canned juice, while in earlier years practically all of the canned grapefruit was put up as sections.

Florida shipments of fresh grapefruit to markets are now made by rail, boat, and truck. During the twenties practically all of the grapefruit moved to market by rail. Since about 1930, the volume of grapefruit shipped by boat has increased very sharply, and the amount shipped by truck has increased gradually, while the volume shipped by rail has markedly declined. This change in method of shipping fruit came into prominence during the depression years when the industry was forced by economic conditions to cut marketing costs.

Grapefruit Canning Increased In All Areas



The use of grapefruit for canning purposes has increased sharply in recent years. The growth of this industry, as indicated by the amount of fruit used for processing in the producing areas, is shown in the graph above.

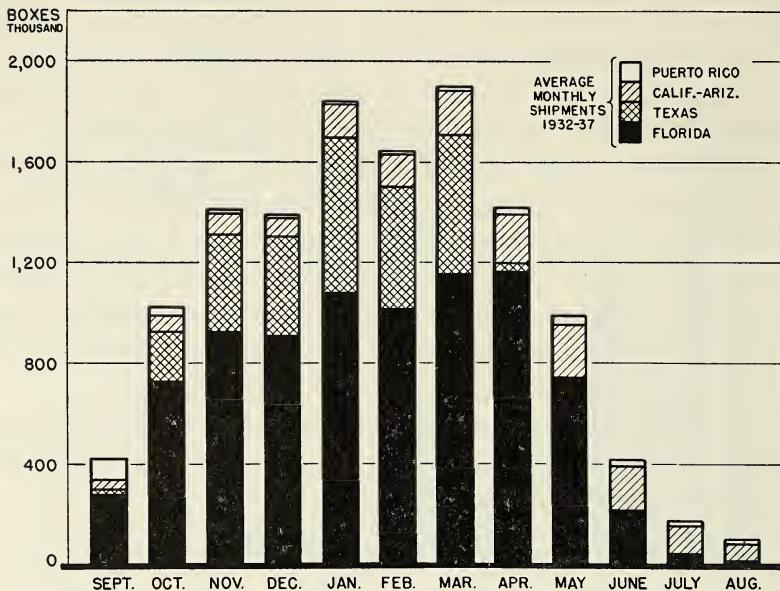
Canning of grapefruit began in a small way in Florida in the early twenties. About a decade afterward, canning of grapefruit was under way on a small scale in Texas, and a little later was beginning in the California-Arizona area.

Florida's first big output of canned grapefruit occurred in the 1930-31 season, when 2,893,000 boxes of fruit were utilized. It was in that season that Florida had its crop of 16,109,000 boxes of grapefruit, approximately twice the average production in the previous 10 years. The pack of canned grapefruit was almost doubled when a crop nearly as big was produced in the 1934-35 season. The pack that season utilized 5,545,000 boxes of grapefruit out of a Florida crop of 15,200,000 boxes. Out of an all-time record production of 18,100,000 boxes of grapefruit in Florida in the 1936-37 season, a total of 6,723,000 boxes was utilized for canning purposes. Since the 1934-35 season, Florida cannerys have utilized an average of 35 percent of the annual grapefruit production in the State.

The growth of the canning industry in Texas is more marked than the development of the industry in Florida, largely because of the sudden increase in Texas grapefruit production. Before the 1934-35 season cannery utilized from a little less than 50,000 boxes to about 100,000 boxes of fruit a year. As production increased, more fruit went into cans. Texas production in the 1935-36 season totaled 2,762,000 boxes, out of which 606,000 boxes were used for canning purposes. The first big crop of grapefruit in Texas came in the 1936-37 season, when 9,630,000 boxes were produced. Out of this crop cannery used 2,563,000 boxes of grapefruit, or more than one-fourth of the total. With a crop around 11,000,000 boxes for the 1937-38 season, utilization by Texas cannery is estimated at around 4,500,000 boxes.

The volume of grapefruit used for canning purposes in the California-Arizona area has been relatively small but has been rising with increased production.

Grapefruit Shipments Each Month by Areas



The heaviest supplies of grapefruit are on markets from the beginning of October to the end of May, when they begin to taper off until harvesting of a new crop starts in September.

The graph above shows the average monthly shipments of grapefruit from the various producing areas during the 4 seasons beginning with the 1932-33 crop. While large quantities of grapefruit are shipped from Florida during November and December, the period of heaviest shipments usually extends from January to about the end of April.

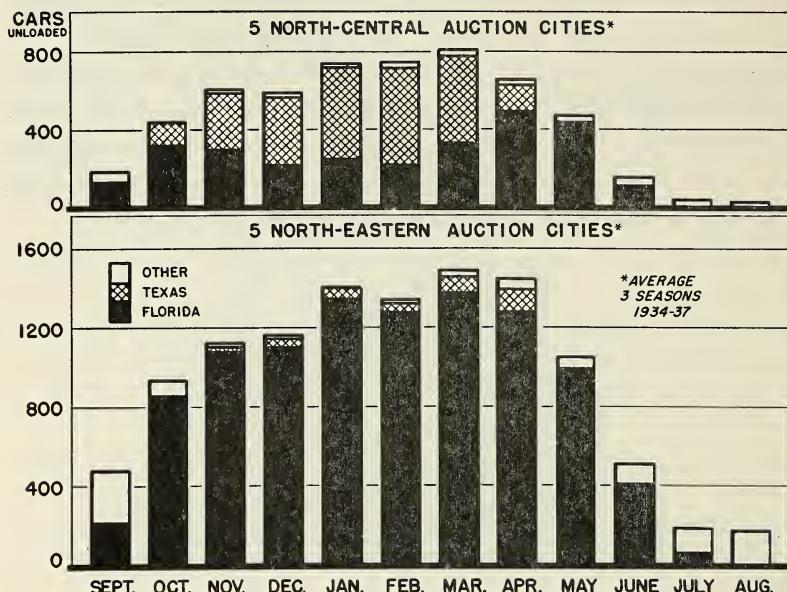
Shipments of grapefruit from Texas are greatest during the 5 months from November to April. Before the 1936-37 season, Texas grapefruit crops were small. The first big Texas grapefruit crop was produced in the 1936-37 season and the State has continued to produce large crops since, offering Florida grapefruit strong competition during the period of heaviest shipments. Because of the Mexican fruit fly infestation, Texas is usually compelled to stop shipping in April, leaving the market clear at that time for the other producing areas.

Heaviest grapefruit shipments from the California-Arizona area begin in January and continue at a fairly even rate to the end of July. The volume of fruit shipped from this area is relatively

small when compared with shipments from Florida or Texas. In the markets, California-Arizona grapefruit must compete more with Texas grapefruit than with that shipped from Florida.

Puerto Rico is more of a competitive factor during the month of September, when first Florida shipments begin, than at any other time of the year. Even so, the volume of grapefruit arriving from Puerto Rico is very small compared with market receipts from the Florida, Texas, and California-Arizona producing areas.

Florida Grapefruit Rules Eastern Markets



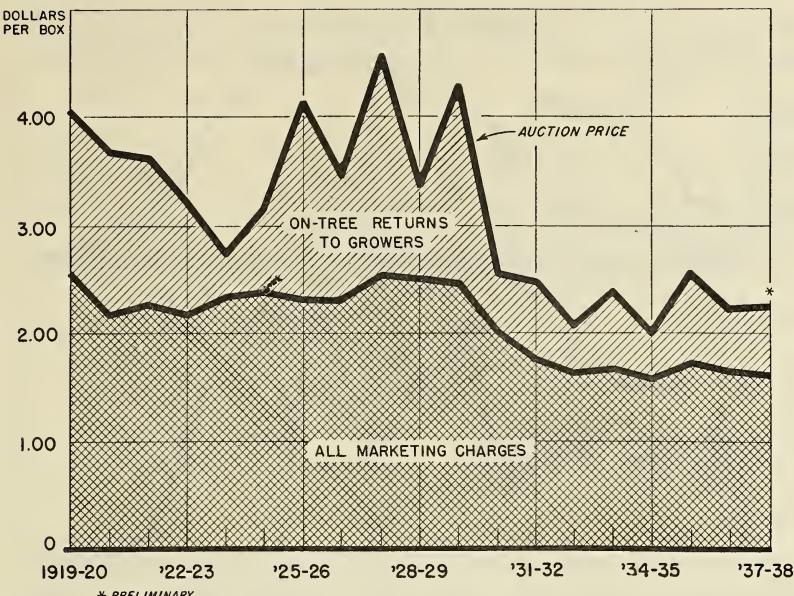
Of the total amount of grapefruit shipped to 10 auction market cities, unloads from Florida are heaviest in eastern cities. In fact, practically all of the grapefruit unloaded in these cities comes from Florida.

The graph above shows carlot unloads of grapefruit from the various producing areas in the five central cities of Chicago, Detroit, Cleveland, Cincinnati, and St. Louis, and unloads in the five eastern cities of Boston, New York, Philadelphia, Pittsburgh, and Baltimore during the three seasons ending in 1936-37.

Most of the grapefruit unloaded in the central cities comes from Texas. This is particularly true from the beginning of November to the end of March, the period when the Texas shipping season is at its peak. When Texas shipments end, shipments from Florida dominate these central markets.

Florida has had the eastern auction markets almost all to itself except during periods of the year when shipments are just getting under way or are about completed. For example, during the period 1934-35 through 1936-37, unloads of grapefruit in the five eastern cities averaged 11,300 cars, of which 10,012 cars were supplied by Florida, 371 cars by Texas, and 917 cars by other producing areas.

On-Tree Returns Florida Grapefruit Growers



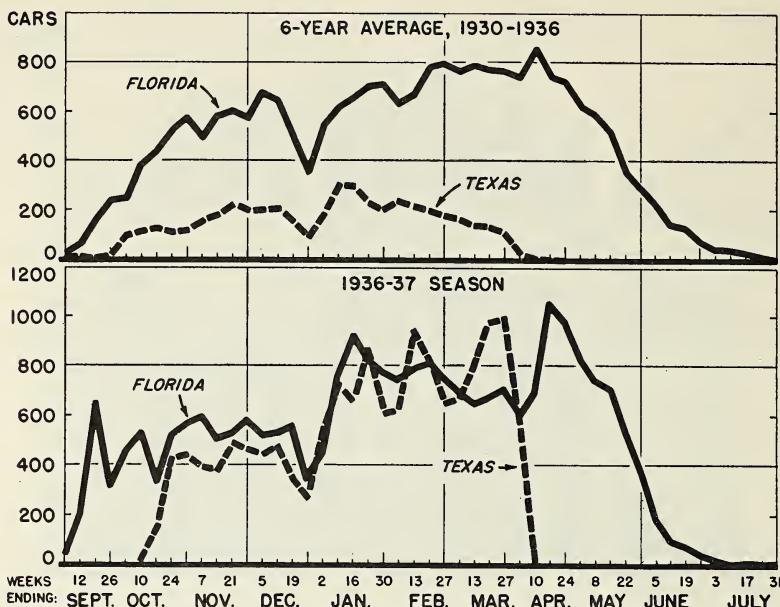
The graph above shows the course which auction prices for Florida grapefruit have followed from 1919-20 to 1937-38 and the relationship between marketing charges and on-tree return to growers.

Direct marketing charges tend not to change with a rise or fall in terminal market prices during a particular season. Therefore, any change in terminal market prices is directly reflected in a similar change in the on-tree return.

Marketing charges for Florida grapefruit have followed a downward trend in recent years with the development of more efficient methods of handling the fruit from the tree through the packing house and to the markets. The rate of decline of the auction price for Florida grapefruit has been steeper, however, than the decline in marketing charges. The result has been a lower on-tree return to growers in recent years.

In the early twenties, the difference between auction prices and on-tree returns to growers generally exceeded \$2.25 a box, and from the 1927-28 to 1930-31 seasons ranged around \$2.50 per box. The reduction in marketing charges came during the depression years and they have been maintained at the lower level since. At the present time, marketing charges of approximately \$1.60 to \$1.65 per box are incurred in selling Florida grapefruit at terminal markets.

Texas Grapefruit Volume Near Florida Level



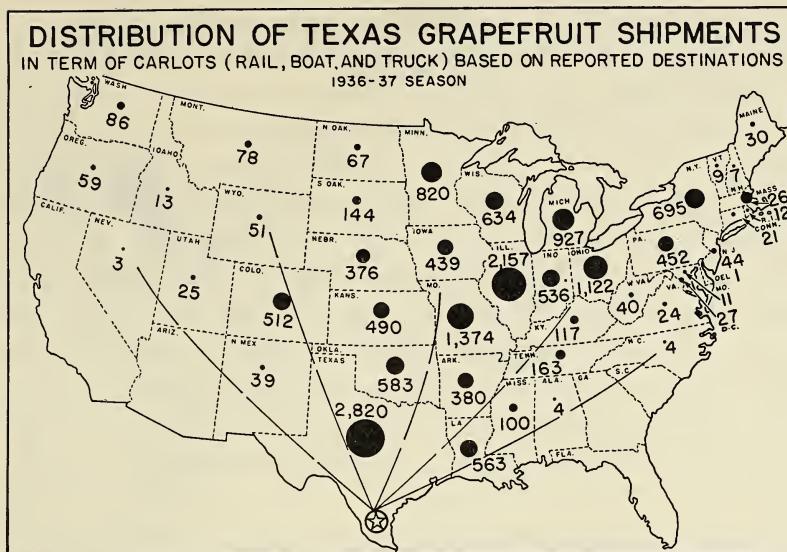
Although market supplies of grapefruit produced in Texas had increased considerably before the 1936-37 season, Florida had almost complete freedom in selling its increasing production without running into large competing supplies from that State.

The first big crop of grapefruit in Texas was produced in the 1936-37 season. This crop amounted to 9,630,000 boxes, compared with an average of around 2,000,000 boxes produced during the preceding five seasons. The Florida crop in the 1936-37 season totaled 18,100,000 boxes, compared with an average of about 13,000,000 boxes in previous years. With the sharp increase in grapefruit production, Texas became an important competitor in the markets and could no longer be disregarded by Florida growers and shippers.

The graph above shows average shipments of grapefruit from Florida and Texas in the period from 1930-31 through 1935-36 when production in Texas was light, and shipments during the 1936-37 season when Texas had its first big crop.

If normal growing conditions prevail in the next 5 years, crops of grapefruit for Florida are likely to exceed that State's record production in the 1936-37 season, and grapefruit crops for Texas may be even greater than the big crop of 11,000,000 boxes produced in the 1937-38 season.

Texas Grapefruit Markets in Central States

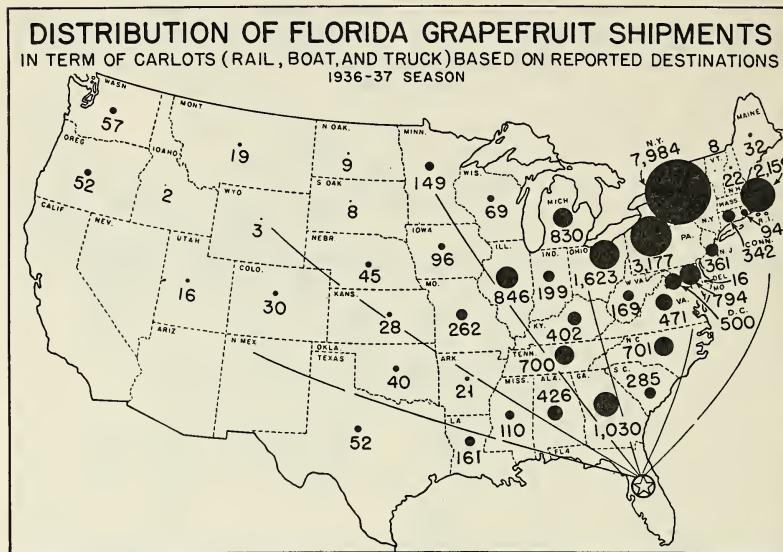


The bulk of the grapefruit produced in Texas is grown in the three Lower Rio Grande Valley counties of Cameron, Hidalgo, and Willacy. With increasing production, Texas grapefruit is finding its way to more markets throughout the country. Distribution of the State's first big crop produced in the 1936-37 season is shown in the map above. The figures are based on reported destinations for fruit shipped.

While Texas grapefruit is distributed nationally, most of it is sold in markets of the Central States. Markets in the eastern parts of the United States are supplied chiefly with grapefruit from Florida, though with the recent development of more efficient water transportation from Texas, more Texas fruit has been transported to major eastern seaboard markets.

During the 1936-37 season, over 17,600 cars of grapefruit were shipped out of the lower Rio Grande Valley of Texas. Information on the destination of shipments is available for 16,800 cars, of which nearly 17 percent moved to markets within the State. The biggest out-of-State market was Illinois, taking nearly 13 percent of the total. The second biggest out-of-State outlet was Missouri, which took a little over 8 percent. The biggest eastern market is New York, but it took only around 4 percent. Pennsylvania took a little over 2 percent.

Most Florida Grapefruit Sold in Northeast



The most important markets for Florida grapefruit are located east of the Mississippi River, and only a relatively small quantity is sold west of the river. The distribution of shipments of Florida grapefruit during the 1936-37 season, based on reported destinations, is shown in the graph above.

The principal markets for Florida grapefruit are located in the northeastern group of States. Out of a total of 24,565 cars shipped during the 1936-37 season, for which destinations were reported, New York State received 7,984 cars, or approximately one-third. Pennsylvania ranked second with 3,177 cars, which was 13 percent. Massachusetts was the third most important outlet, taking 2,159 cars, or slightly less than 9 percent of the total. Approximately 62 percent of the grapefruit shipped into these three States were sold in New York City, Philadelphia, Pittsburgh, and Boston markets.

The north central group of States ranked second as an outlet for Florida grapefruit. The most important in this group was Ohio, which took 1,623 cars, 52 percent of which was sold in the Cleveland and Cincinnati markets. Shipments to Illinois and to Michigan were about half that amount for each State.

In the southeastern group of States, Georgia ranked first as an outlet for Florida grapefruit, taking 1,030 cars, or 4 percent of the total reported shipments. North Carolina and Tennessee each took around 700 cars.

Factors Relating to Florida Oranges

Orange production in Florida ranks first in the citrus industry of the State. Of the 30,000 growers engaged in citrus production, approximately 95 percent produce oranges. The value of the crop accounts for around two-thirds of the total Florida on-tree farm value for citrus fruit.

For the United States as a whole, Florida ranks second in the production of oranges, first place being held by the California-Arizona area. Florida is the principal tangerine-growing State, furnishing practically all of the commercial supplies on markets during the shipping season. Approximately 35 percent of the total United States supply of oranges comes from Florida. Most of these are sold on markets east of the Mississippi River, the leading outlets being located in the northeastern and southern groups of States.

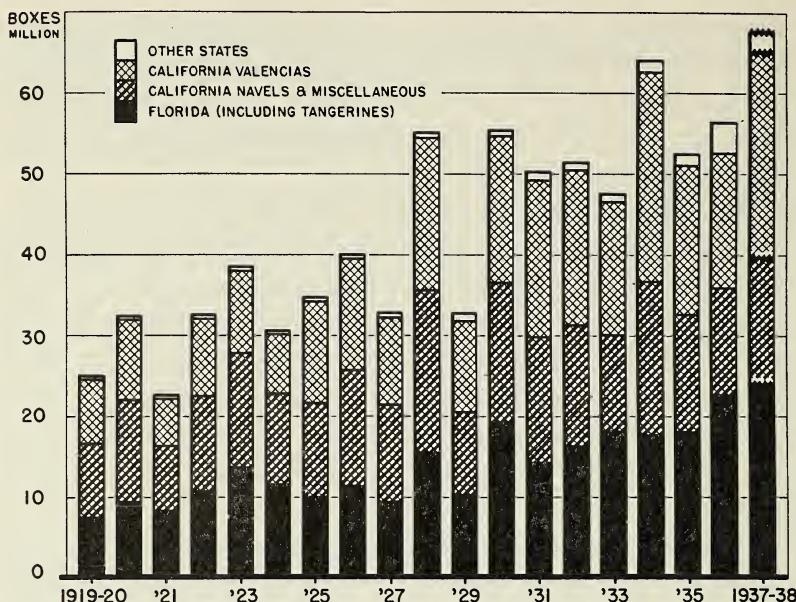
The production of Florida oranges has increased steadily, and continued increases are anticipated. The production of tangerines in Florida has increased very rapidly, the greatest rise taking place in recent years.

Florida crops of oranges averaged 10,300,000 boxes and tangerines averaged 850,000 boxes in the decade since 1920. Production increased appreciably since then, oranges averaging 15,800,000 boxes and tangerines 2,150,000 boxes a year. The 1937-38 crop of oranges, placed at 23,750,000 boxes, is the largest in the history of the State. This crop represents about one-third of the total United States production.

In recent years, the annual on-tree value of oranges and tangerines has represented about 72 percent of the value of all citrus fruit grown in Florida. On-tree value of Florida oranges and tangerines, in the period from 1925-26 through 1930-31, averaged \$19,300,000. A low point in value was reached in the 1932-33 season when the figure dropped to nearly \$9,350,000. On-tree value has averaged over \$24,600,000 since the 1934-35 season.

Numerous changes have taken place with the development and growth of the Florida orange industry. Some of the economic trends and forces responsible for these changes are indicated in the following pages.

All Areas Show Steady Increase In Oranges



The increase in United States production of oranges during the past decade has been more pronounced than in years previous. The trend in orange production for the principal areas is shown in the graph above.

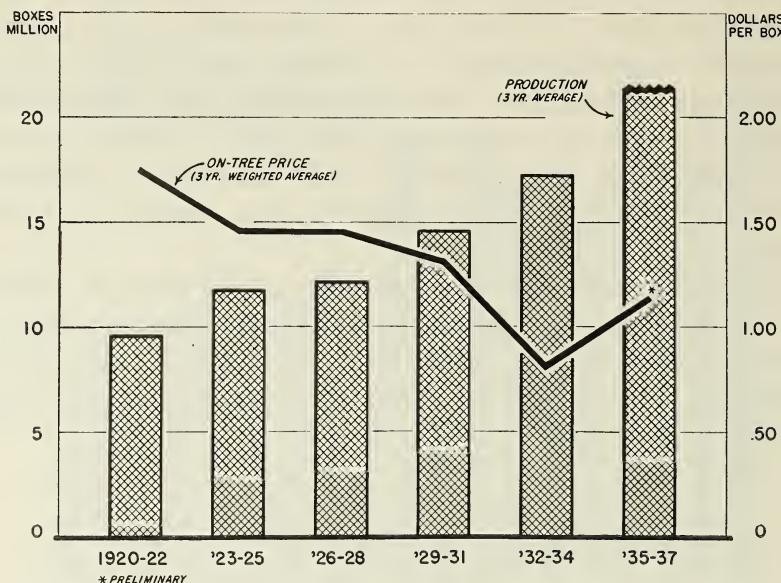
In the period from the 1919-20 season through the end of the 1927-28 season, production of oranges showed only moderate increases. The first big crop of oranges in the United States came in the 1928-29 season when 55,131,000 boxes were produced. This crop was 72 percent higher than the average production in the period from the 1919-20 season. The Florida crop reached a high of 15,588,000 boxes, exceeding by 51 percent the previous average production. In California a total of 38,994,000 boxes of oranges was grown. This crop was 82 percent greater than the average production since the 1919-20 season.

The United States orange crop dropped to 32,621,000 boxes in the 1929-30 season. The next year, however, production in all areas exceeded the 1928-29 level. The national crop totaled 55,362,000 boxes, the crop in Florida 19,211,000 boxes, and 35,470,000 boxes in California. Since the 1930-31 season the tendency has been for production of oranges to approximate the crop grown in that season.

All-time records of orange production for the United States as a whole are exceeded by the estimated 1937-38 crop of over 68,600,000 boxes. Out of this amount, Florida production is estimated at the record high of 23,750,000 boxes, while a second high is set for California with an estimated crop of 42,200,000 boxes. Florida's previous record crop was in 1936-37 when 22,500,000 boxes were produced, while the high for California was in the 1934-35 season when the crop totaled 45,047,000 boxes.

The recent increases have occurred in oranges grown in Florida and Valencia oranges grown in California. Some increase in orange production has taken place in Texas. Production of California navel oranges has continued about uniform with only a slight tendency to increase.

Florida Orange Production and Price Trends



The production of oranges in Florida increased gradually until about 1928, but since then the increase has been very marked. Lower price levels accompanied the rise in production.

The general course followed by Florida orange production (including tangerines) and on-tree price to growers are indicated in the above graph on the basis of 3-year averages from 1920-21 to 1937-38.

During the first 3-year period shown on the graph, Florida orange crops increased slowly and the weighted average on-tree price followed a downward trend with the rise in production. The crop in the 3-year period beginning with the 1926-27 season averaged 12,196,000 boxes and the on-tree price averaged \$1.45 per box. In that period, the 1928-29 crop totaled 15,500,000 boxes, the biggest up to that time, and the on-tree price averaged 76 cents.

For the next 3-year period beginning with the 1929-30 season, production averaged 14,578,000 boxes and the on-tree price average went down to \$1.34. All previous big crop records were broken in the 1930-31 season of that period, when 19,211,000 boxes were produced in Florida.

Florida orange production for the 3-year period beginning with the 1932-33 season climbed to an average of 17,300,000 boxes.

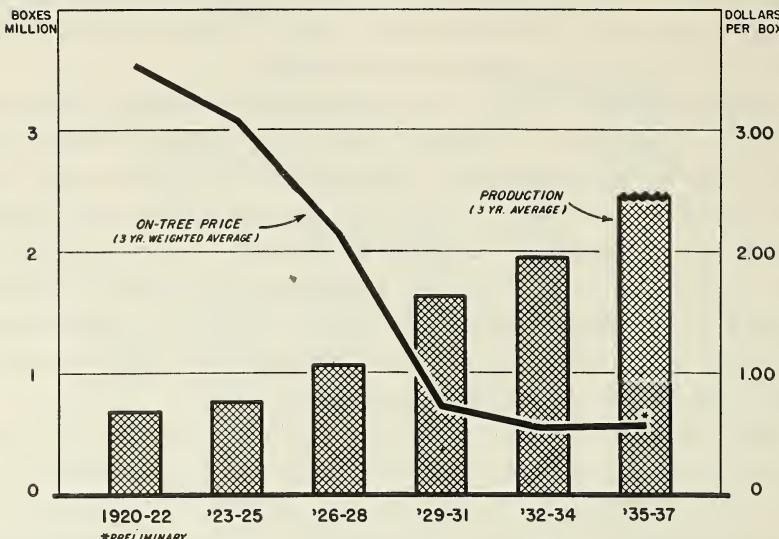
This, coupled with factors in the general depression, forced on-tree prices down to an average of 82 cents. This price was considerably below the downward trend which Florida orange prices had been following as production increased.

Average production for the 3-year period beginning with the 1935-36 crop advanced sharply. While the average on-tree price for the period climbed above the depression level, the price for the period is at a point in line with the downward price trend which has accompanied increased production. Average production of Florida oranges in the last 3-year period is slightly in excess of 21,400,000 boxes, with an average on-tree price a little over \$1.10 per box. This 3-year period witnessed the production of two record crops in the Florida orange industry.

The 1936-37 crop totaled 22,500,000 boxes and the 1937-38 crop exceeds 23,750,000 boxes, the largest production in the history of the industry. A freeze which caused serious damage to California citrus fruit together with generally improved economic conditions resulted in an improvement in prices for the 1936-37 Florida orange crop despite its large size. With record production of oranges in the 1937-38 season in both California and Florida, prices of Florida oranges have been relatively low during this season.

Continued increases in Florida orange production are expected as trees increase their bearing capacity and young trees come into production.

Florida Tangerine Production-Price Trends

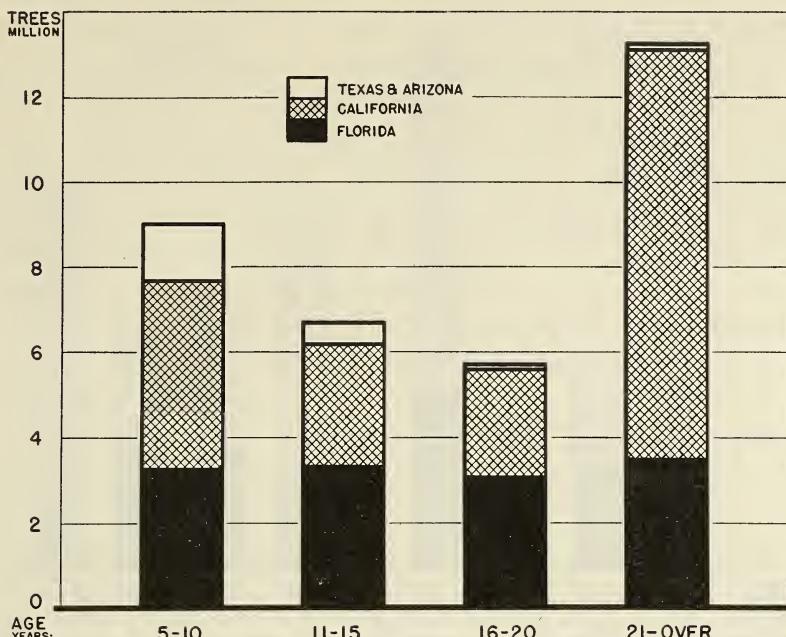


Tangerines are of considerable commercial importance in Florida. In recent years the industry has been confronted with sharply declining prices accompanying a trend of greatly increased production. The trends of Florida tangerine production and on-tree prices on a 3-year average basis are indicated in the graph above.

In the 1920-21 through 1922-23 period, production averaged 683,000 boxes, and the on-tree price averaged \$3.54 per box. With a slight increase in production to 767,000 boxes in the 1923-25 through 1925-26 period, prices fell off to \$3.08 per box. In the 1926-27 through 1928-29 period, production increased further to 1,067,000 boxes, and the on-tree price dropped to \$2.15. A rise in production to 1,633,000 boxes in the 1929-30 through 1931-32 period saw a sharp drop in on-tree prices to 72 cents per box.

Florida tangerine production continued to climb in the 1932-33 through 1934-35 period, going to 1,950,000 boxes. The on-tree price for that period averaged 54 cents per box. Production of Florida tangerines showed a more marked rise for the 1935-36 through 1937-38 period, the crop averaging 2,450,000 boxes. The on-tree price for this period is estimated to average only 56 cents per box, showing practically no recovery from the depression period levels.

Age of Orange Trees by Areas of Production



Of the 34,638,000 orange trees of all varieties in the producing States of California, Florida, Texas, and Arizona, 45 percent are not in full production and range in ages from 5 to 15 years. California ranks first with 19,471,000 orange trees, while Florida is second with 13,135,000. Texas and Arizona combined have approximately 2,000,000 orange trees.

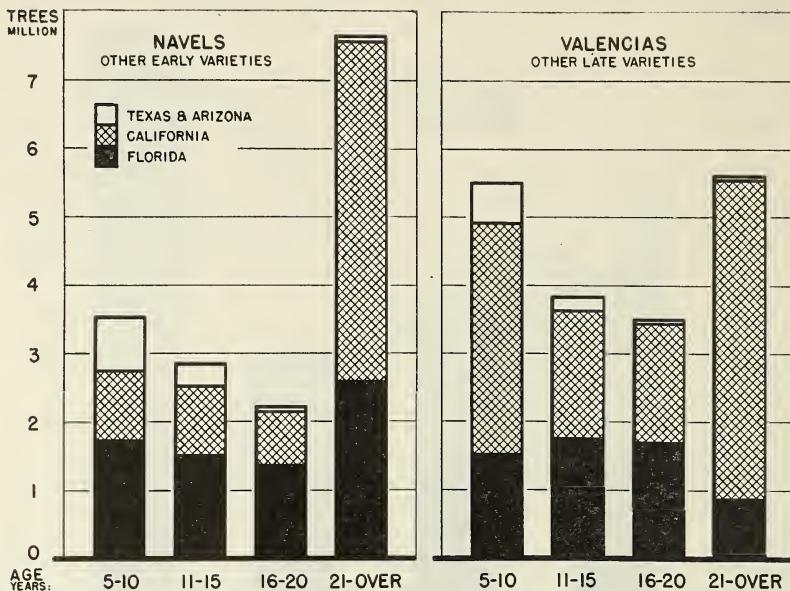
The distribution of orange trees by States and age groups, as of July 1937, is shown in the graph above.

A total of 9,040,000 trees, or 26 percent of all the orange trees in the four producing areas, is in the age group ranging from 5 to 10 years. A little over half of these, 4,402,000, are in California, while Florida has 3,271,000. Texas has 917,000, and Arizona has 450,000 in this age group.

The number of trees 11 to 15 years old is 6,690,000, or 19 percent of the total. Most of the trees in this age group, 3,289,000, are in Florida, while 2,881,000 are in California, 492,000 are in Texas, and 28,000 are in Arizona.

Orange trees from 16 to 20 years old number 5,696,000, or 17 percent of the total. Orange trees 21 years old and over number 13,212,000, or 38 percent of the 34,638,000 trees of all varieties of oranges in the four producing areas.

Age of Orange Trees by Varieties in Areas



A greater total of trees, as well as more young trees, are planted in Valencia and other late varieties of oranges than in navels and other early varieties. The age groups of trees by varieties and by States are shown in the graph above.

Navel and other early varieties of oranges total 16,227,000 trees, of which only 39 percent range in ages from 5 to 15 years and are not in full production. California and Florida have about the same number of trees planted to early varieties, although California has by far the larger number of old trees.

Of these early varieties, trees from 5 to 10 years old number 3,525,000, or 21 percent of the total. Florida, with 1,738,000, has about half of the trees in this group, while California has 1,013,000. Texas has 536,000, and Arizona 238,000.

Trees ranging in age from 11 to 15 years number 2,850,000, or 18 percent of the total. More than half of these, or 1,520,000, are in Florida, while California has 1,012,000 and Texas 299,000.

Trees from 16 to 20 years of age number 2,208,000, or 14 percent of the total. Most of these, 1,375,000, are in Florida. California has 799,000.

Trees 21 years old and over number 7,644,000, or 47 percent of the total of 16,227,000 planted in early varieties of oranges.

Most of these old trees, 4,984,000, are in California, while Florida has 2,606,000.

Valencias and other late varieties of orange trees total 18,411,000, of which 51 percent ranging in age from 5 to 15 years, are not in full production. California, with 11,683,000 of these trees, has about twice as many as Florida.

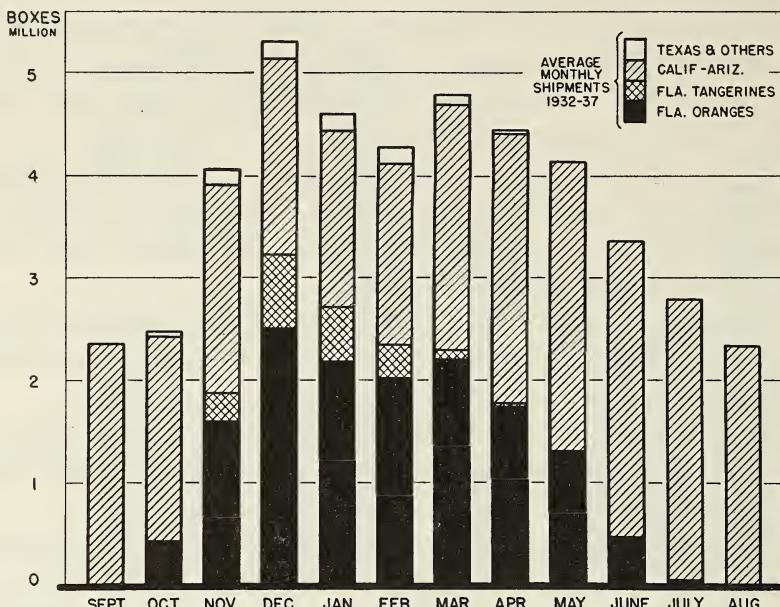
Of these late varieties, trees from 5 to 10 years old, number 5,515,000, or 31 percent of the total. Of this number, California has 3,389,000 trees, while Florida has 1,533,000. Texas has 381,000 trees, and Arizona 212,000.

Trees from 11 to 15 years old number 3,840,000, or 20 percent of the total. California has 1,752,000 trees in this age group, while Florida has 1,710,000.

Trees 21 years old and over equal 5,568,000, or 30 percent of the total. Of this number, California has 4,673,000, while Florida has only 884,000.

The number of trees which fall in various age groups indicates an upward trend of orange production for the next few years. The rate of increase will probably be slightly less than that of the past decade. Indications also are that production of Valencias and other late varieties may be expected to increase more rapidly than the production of navel and other early varieties. This is indicated by the large number of young trees in the late varieties not in full production. Production of navel and early varieties of oranges may be expected to remain stationary in California (mainly because of the large number of old trees in full bearing), and show somewhat of an increase in other producing States.

Shipments of Oranges Each Month by Areas



Markets are most heavily supplied with oranges from November to May. In this period all producing areas are shipping, and except for the month of December when supplies marketed are at a peak in response to the holiday demand, receipts are at a uniformly high level. The graph above shows the average monthly shipments of oranges made by the various producing areas from 1932 to 1937.

Shipments of oranges from Florida start in October, but do not get fully under way until the following month. From the peak in December, shipments continue heavy until April. During this part of the shipping season, Florida markets early and mid-season varieties of oranges. The Valencia oranges become ready for market sometime during the latter part of February or the forepart of March, but shipments of these usually do not become great until after the early and mid-season varieties are out of the way. The bulk of the Valencias are moved out of Florida from the first part of March to June.

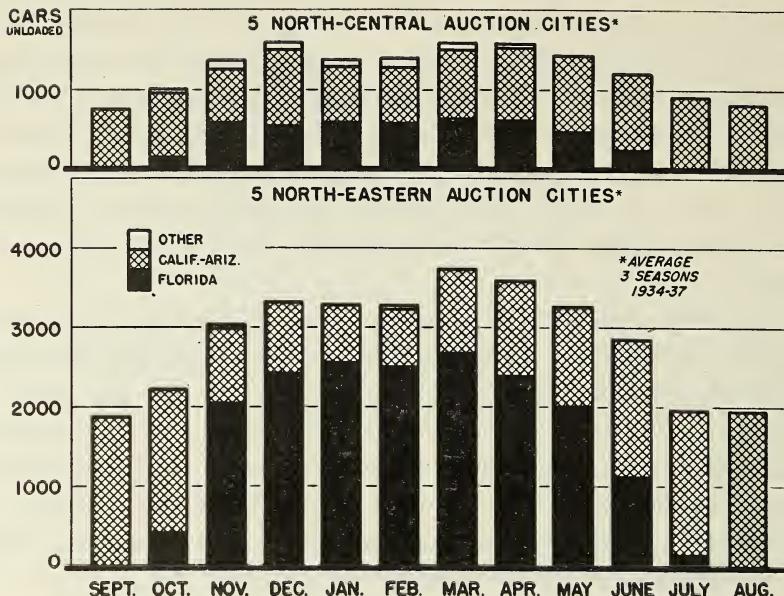
Commercial production of tangerines is confined principally to Florida. The shipping season is relatively short, extending from November to March. Heaviest tangerine shipments are made during December and January.

Large quantities of oranges are marketed from the California-Arizona area during the entire year. Navel and other early varieties of oranges begin moving to markets in November, about the same time that Florida starts shipping early and mid-season varieties in volume. The navel orange shipping season usually ends early in May. California-Arizona shipments of Valencia and other late oranges ordinarily begin in March, but do not get fully under way until April and are completed usually sometime during November, when the movement of navel oranges begins from this area.

The biggest share of the oranges shipped from the California-Arizona area is represented by Valencia and other late varieties. Most of these are moved during months in the late spring, summer, and early fall, when Florida ships relatively few oranges.

Shipments of oranges from Texas and other producing States as yet are not very large compared with those from Florida or California. Texas shipments, while small, are greatest during December, January, and February.

Florida Oranges Lead in Eastern Auctions



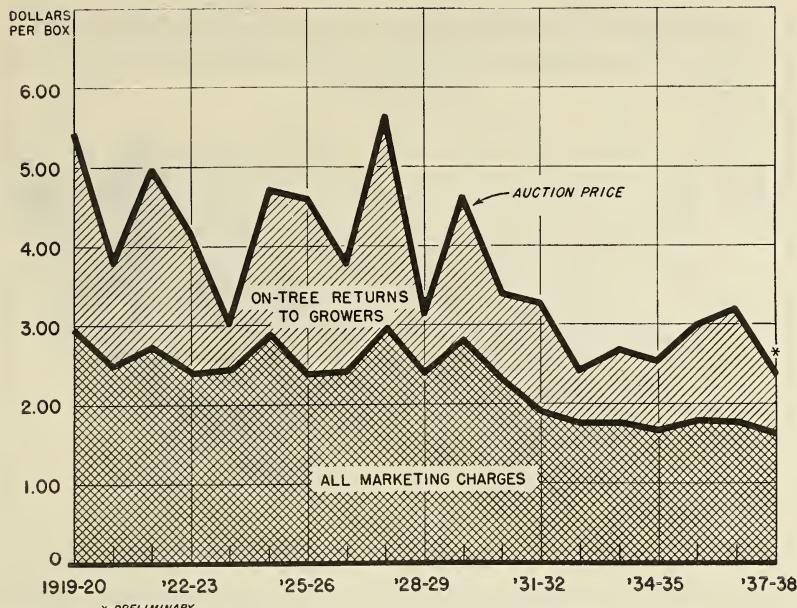
From the beginning of November to the end of May, Florida oranges lead in monthly volume in eastern market centers.

The graph above shows average unloads of oranges from various producing areas for the seasons 1934-35 through 1936-37 at the five eastern auction cities, Boston, New York, Philadelphia, Pittsburgh, and Baltimore, and at the five central cities, Chicago, Detroit, Cleveland, Cincinnati, and St. Louis.

Unloads in the 5 eastern auction cities for the 3 seasons averaged 34,489 cars a year. Of this total, 18,315 cars came from Florida, 16,124 from the California-Arizona area, and 50 from other producing sections. The five central auction cities are, in the main, supplied with oranges from the California-Arizona area. While the bulk of the oranges on eastern markets during the Florida shipping season comes from Florida, unloads in the five central cities from this State during the same months are considerably less than half of the total unloads from all of the areas.

Total unloads of oranges at the five central auction cities from the 1934-35 season through the 1936-37 season averaged 14,979 cars a year. Of this amount, the California-Arizona area supplied 10,076 cars, Florida 4,405 cars, and other producing areas 498 cars. The oranges from other producing areas came largely from Texas.

On-Tree Returns to Florida Orange Growers



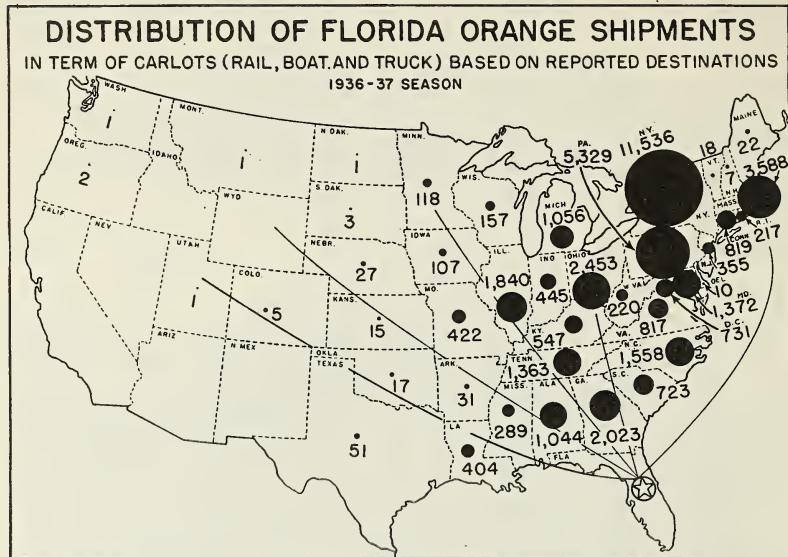
The courses which grower returns, auction prices, and marketing charges for oranges have followed from 1919-20 to the 1937-38 season are indicated in the graph above.

Marketing charges for oranges have shown some tendency to decline in recent years, particularly since the depression set in. These marketing charges include payment for picking, hauling, packing, loading, freight and refrigeration, and selling the fruit in the terminal markets.

Since marketing charges tend to remain fixed during a given season, whereas terminal market prices change from day to day, any rise or fall in terminal market prices has a direct effect on the returns to growers. Marketing charges ranging from \$1.65 to \$1.75 must be deducted from the sale price of Florida oranges at terminal markets in order to arrive at the return available for payment to growers.

Terminal market prices are influenced by many factors. The level of consumer income, shipments of citrus fruit, shipments of competing fruits, and the quality and size of citrus fruit shipped are among the most important. A change in any one of these will result in a change in terminal market prices of citrus fruits unless such an influence is offset by changes in any of the other factors.

Most Florida Oranges Sold in Eastern States



The bulk of the oranges shipped from Florida is sold in markets east of the Mississippi River, the principal outlets being in the northeastern group of States.

The graph above shows the distribution of Florida shipments of oranges during the 1936-37 season when a total of 42,264 cars were moved out of the State. Destinations were reported for 39,841 cars.

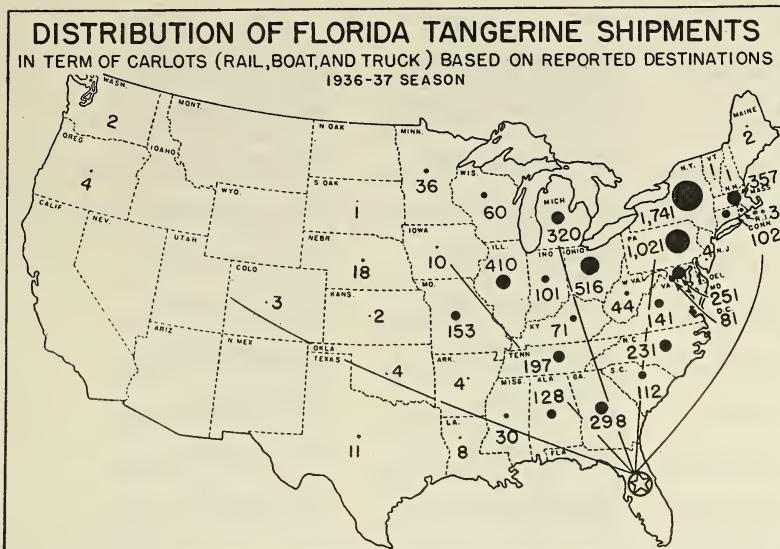
New York State is the biggest outlet for Florida oranges, taking 11,536 cars, or 29 percent of the total for which destinations were reported. Of this amount, approximately 79 percent was sold on the New York City auction market. The second largest outlet is Pennsylvania, which took 5,329 cars of Florida oranges, or over 13 percent. Over 67 percent of these were sold in the Philadelphia and Pittsburgh auction market cities. Massachusetts ranked third in importance as a market receiving 3,588 cars, which represented 9 percent.

Second in importance as a regional outlet for Florida oranges is the southeastern group of States. In this group, Georgia ranked first by taking 2,023 cars, or 5 percent.

In the north central group of States, Ohio was the principal destination of Florida orange shipments.

Shipments of Florida oranges west of the Mississippi River are relatively small, with oranges moving west of the Rocky Mountains only in rare instances.

Northeast Markets For Florida Tangerines



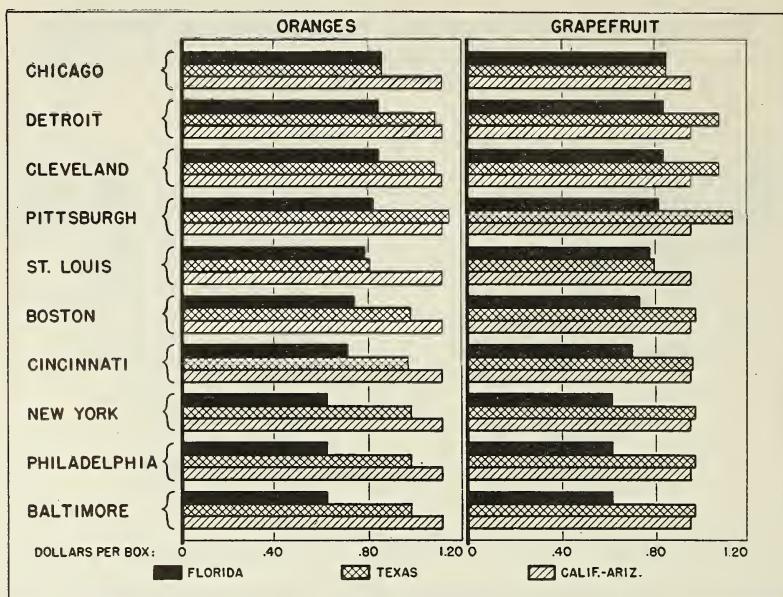
Practically all of the commercial shipments of tangerines come from Florida. The main markets for Florida tangerines are located east of the Mississippi River, especially in the northeastern and north central groups of States. Destinations were reported on 6,526 cars of Florida tangerines out of a total of 6,914 cars shipped during the 1936-37 season. The distribution of these is shown in the graph above.

New York State received 1,741 cars, or approximately 27 percent of the tangerines from Florida for which destinations were reported. Pennsylvania ranked second, with 1,021 cars, or over 15 percent of the total. The third most important market was Ohio, which received 516 cars, representing 8 percent. Illinois received 410 cars and ranked fourth in importance as an outlet. The fifth most important market for Florida tangerines was Michigan, receiving 320 cars.

In the southeastern group of States, Georgia was the main outlet, taking 298 cars, or 4.5 percent of the total. North Carolina took 231 cars and Tennessee 197 cars.

The most important market for Florida tangerines west of the Mississippi River was Missouri, which took 153 cars. Shipments to States beyond those bordering the Mississippi River were of minor importance, many of them receiving no tangerines from Florida.

Freight Rates From Citrus Producing Areas



Florida's relative nearness to important market centers has made it possible for this State to enjoy a freight rate advantage over other citrus producing areas. This advantage was definitely increased by competition which developed among the various carriers for the State's citrus transportation business.

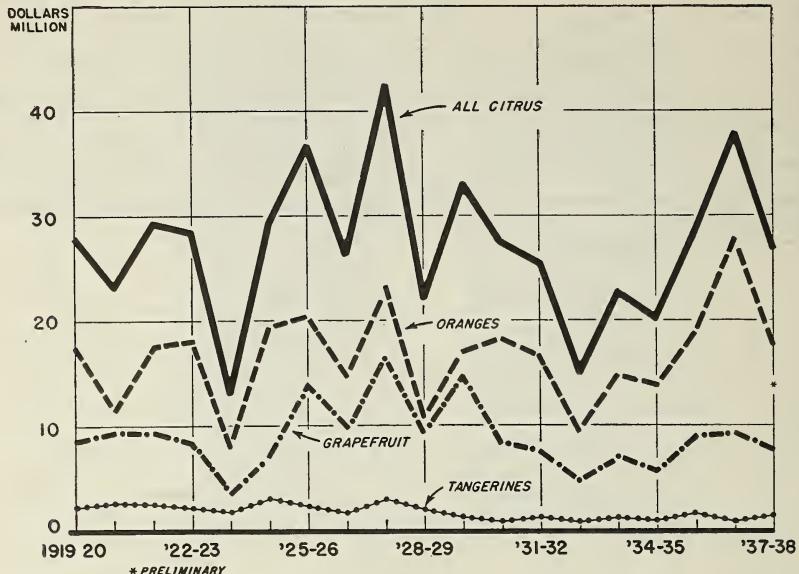
The extent of Florida's freight rate advantage over Texas and the California-Arizona orange and grapefruit producing areas to the 10 auction markets, based on rates effective March 28, 1938, is indicated in the graph above. The freight rate per standard box of fruit shipped from Florida is less in all instances except one. In this one instance the rates are the same for fruit shipped to the Chicago market from Florida and Texas.

Florida's greatest rate advantage is on shipments to eastern seaboard and northeastern markets where population is most concentrated. During the Florida shipping season, these markets are dominated by grapefruit and oranges from that State.

Shipments of citrus fruit from the California-Arizona area move into markets east of Denver, Colorado, under a uniform freight rate of \$1.11 cents per standard box for oranges and 96 cents for grapefruit. The rate for Florida oranges and grapefruit moving to New York, Baltimore, and Philadelphia is 62 cents, while the rate

for Texas fruit is 98 cents per standard box. Florida's rate to Cleveland and Detroit is 84 cents, and the Texas rate is \$1.08. The rate to Chicago from both States is 85 cents per box. Florida's rate to Pittsburgh is 82 cents and the rate for Texas is \$1.14. The rate to St. Louis from Florida is 78 cents and from Texas it is 80 cents. Shipments of oranges and grapefruit can move from Florida to Boston for 74 cents per standard box, while the rate from Texas is 98 cents. The Florida rate to Cincinnati is 71 cents and from Texas it is 97 cents.

Changes in On-Tree Value of Florida Citrus



Seasonal returns to growers from the production of citrus fruit tend to vary with the size of the crop and the purchasing power of consumers. The extent to which returns vary is indicated by the graph above which shows the combined and separate on-tree value of Florida oranges, grapefruit, and tangerines since the 1919-20 season.

The depression period from 1930 through 1933 was one in which the on-tree value of Florida citrus fruit was relatively low. Production at the beginning of this period had started to increase more rapidly than in previous years. At the same time, the income of consumers fell sharply, reaching a low point in 1932. The on-tree value of Florida citrus fruit in the 1932-33 season was slightly in excess of \$15,000,000, while for the two previous seasons it had averaged a little over \$26,000,000.

The recovery made in the on-tree value of Florida citrus fruit since these depression years, has been due largely to the gains in consumer income. As a result, it was possible for markets to absorb more citrus fruit available because of continued increases in production. However, the record orange crop of the 1937-38 season forced a reversal in the upward trend which the on-tree value of Florida citrus fruit had been following since the 1932 depression period.

